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ABSTRACT

A project considered issues that might contribute toward raising the status of technical and vocational education (TVE) in Asia and the Pacific region. It also provided a review of TVE in Australia, Bangladesh, China, Fiji, India, Indonesia, Iran, Japan, Republic of Korea, Malaysia, Pakistan, Thailand, and Vietnam. Researchers involved in the project endeavored to provide a number of examples of best practice that might act as models for other countries desiring to improve the status of TVE. The countries showed considerable variation with regard to their stage of development, country economic conditions, the state and approach to the provision of TVE, and the problems that affected these countries. Issues addressed in the case studies included strategies to innovate TVE systems to cope with changing demands of the labor market caused by national economic development; policies to promote close linkages between TVE institutions and industry; efforts to include entrepreneurial orientation and skills in TVE; measures to improve teacher quality; procedures to promote articulation between TVE and the education system; and policies to improve the participation of special social groups in TVE. These factors were found to affect the status of TVE: articulation, recognition of learning, broad based training, curriculum, quality, teachers, industry linkages, and duplication. (The report begins with lists of researchers and the case studies and concludes with the recommendations.) (YLB)

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CASE STUDIES ON TECHNICAL AND VOCATIONAL EDUCATION IN ASIA AND THE PACIFIC

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OVERVIEW

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International Project on Technical and Vocational Education
Projet international pour l'enseignement technique et professionnel

CASE STUDIES ON TECHNICAL AND VOCATIONAL EDUCATION IN ASIA AND THE PACIFIC

AN OVERVIEW

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UNEVOC is the International Project on Technical and Vocational Education which was launched by UNESCO in August 1992. In the field of technical and vocational education, UNEVOC aims to foster the international exchange of ideas, experience and studies on policy issues; strengthen national research and development capabilities; facilitiate access to data bases and documentation; promote innovations in staff development; and support international cooperative actions.

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PREFACE

The UNESCO UNEVOC *Case Studies on Technical and Vocational Education in Asia and the Pacific* project, was commissioned by UNESCO to undertake research into the factors affecting the status of technical and vocational education (TVE) in the Asia and Pacific Region.

Researchers from Australia, Bangladesh, China, Fiji, India, Indonesia, Iran, Japan, Republic of Korea, Malaysia, Pakistan, Thailand and Vietnam produced individual Country Case Studies in connection with this project during 1994.

This document seeks to provide an overview and synthesis of the Country Case Studies with particular emphasis on the problems, issues and trends highlighted by researchers involved in this project.

It is necessary for this document to be read in conjunction with the Country Case Studies produced in connection with this project, details of which are contained on pages 6 - 7 of this document.

A Regional Meeting to discuss the Country Case Studies was held in Kuala Lumpur during September 1994, the outcome of which was a series of recommendations pertaining to possible directions that might be pursued by governments in the Asia and Pacific Region, to improve the status of TVE. These recommendations are included in this publication.

CASE STUDY ISSUES PROJECT
TERMS OF REFERENCE

This project was directed at Asia and the Pacific region. The case studies undertaken by this project were based on the following terms of reference:

(a) An analysis of the present situation
- Economic Conditions
- Human resource development
- The existing technical and vocational education (TVE) system (legislation, management, structures, institutions, and articulation and other elements of the education system).

All country case studies covered this section

A forecast of the future situation ie. what the country hopes to achieve through an improved technical and vocational education system.

Ways to achieve the desired future situation by:
- Identifying the existing problems
- National policies and innovative measures to promote the further development of technical and vocational education.

(b) One or more of the issues listed below was addressed by each country case study, with consideration of examples that have contributed to raising the recognition and status of technical and vocational education. These case studies are intended to provide examples of best practice and could act as a model for other countries desiring to develop policies and strategies to improve the status of technical and further education. Issues considered in national case studies included:

1. Strategies to innovate TVE systems to cope with the changing demands of the labour market caused by national economic development.

2. Policies to promote close linkages between TVE institutions and industries.

3. Strategies to raise the social status of the entire TVE system and its graduates.

4. Approaches to allocate and efficiently utilise the financial resources to support TVE.

5. Efforts to include entrepreneurial orientation and skills of TVE.

6. Measures to improve the quality of teachers and instructors.

7. Procedures to promote articulation between TVE and elements of the educational system, especially higher education.

8. Ways to improve career guidance and counselling.

9. Policies to improve the participation of special social groups in TVE.

10. Development of TVE in the informal sector.

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COUNTRY CASE STUDIES

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2. Adbur Rafique, *Case Studies on Technical and Vocational Education in Asia t the Pacific: The Development of Technical and Vocational Education in Bangladesh - A Case Study in Quality Improvement*, UNESCO, 1994, ISBN 1 86272 445 8.

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OVERVIEW

The question of status.

The main focus of this project has been to consider issues which might contribute towards raising the status of technical and vocational education (TVE) in Asia and the Pacific region, as well providing a review of TVE in Australia, Bangladesh, China, Fiji, India, Indonesia, Iran, Japan, Republic of Korea, Malaysia, Pakistan, Thailand and Vietnam.

In this context, many Country Case Study researchers have considered TVE to encompass training, because such programs are directed at employment preparation and skills enhancement.

Given that consideration of factors impinging on the status of TVE, is the main focus of this project, it might be helpful to consider what the notion of status means and how this concept might be viewed.

'Status' can have a meaning that is in terms of recognition or standing. It is about how others might view somebody or something, perhaps an unconscious ranking of desirability. Status for an individual or calling might be reflected in income earning ability. It might be to do with the benefits of a job. However, this is not always the case as there are many instances of those who occupy high office is some organization, that receive little or no financial reward for their efforts, yet enjoy high status and public esteem.

Status might be given due to some activity offering the possibility of better career prospects. It might also be given by the industrial or commercial community, in recognition that a better trained workforce creates the prospect of more efficient operations. Status is something that is granted by those not necessarily involved in the activity which is being ranked.

Many project researchers have commented that TVE, in many cases, has not been given high status, particularly when compared with higher education and to a lesser extent when TVE is viewed as an alternative pathway to 'general' secondary education.

Those who accord status to TVE include students or potential TVE students, parents, employers, industry, union and professional bodies, government and the community at large.

Status is connected to the notion of relative importance, and this factor might be significant when decisions involving any allocation of resources are made. Given that TVE is a both an investment and a cost, and that there are increasing pressures towards market forces in almost all national economies, the ability of TVE in any nation to attract sufficient funding from both government and non-government sources is related to the perceived status that importance of TVE enjoys. As national governments consider overall economic and social objectives, then the perception of the relative importance of TVE will be a factor in any decisions related to funding and government policy.

In addressing the topic the researchers involved in this project have endeavoured to provide a number of examples of best practice which might act as models for other countries desiring to improve the status of TVE.

An analysis of the present situation.

Given the countries involved in this project, there was considerable variation between these countries, as regards their stage of development, country economic conditions, the state and approach to the provision of TVE, and the problems which affected these countries.

Economic conditions.

Many nations in the region are developing countries, which have only recently moved away from agriculture forming the basis of their economy, or are still largely dependant on agriculture, or mineral exploitation for national economic well being. On the other hand a number of countries in the region have significant manufacturing and service sectors, and are moving to embrace the information society. Most countries in the region have as an objective, the target of becoming a developed country in a time frame not exceeding a decade or so.

All countries in the region are striving to improve their economic condition. The importance of a well educated and trained workforce, particularly at 'skilled worker' and 'technician' level was seen to be an important factor in providing the necessary inputs to enable nations to advance. In this context the provision TVE needs to be integrated with national planning for economic development.

In spite of strong economic growth by many countries in the region, and a shortage of educated and competent personnel in many key occupations, there was significant unemployment and under-employment in a number of economies, even at graduate level where there was a mismatch between economic demand and individual competencies.

Economic growth tended to be uneven even within countries. In many countries regions more focussed on agriculture tended to have a lower rates of economic growth, more unemployment, and frequently lacked opportunities for education and training. In many situations the trend of a shift in population from rural to urban areas created further difficulties as many cities have severe infrastructure problems, such as an overtaxed public transport system or having to cope with an inadequate water supply. New arrivals to urban areas frequently lack the necessary skills to be employed in many industries, other than in low paid unskilled work. Although some countries in the region have a large unskilled workforce which is paid low wage rates, as the economy of a country improves, there is a tendency to lose the benefit of such an advantage as wages rise.

Several countries in the region had significant economic problems brought about by peculiar local factors, such as the aftermath of internal civil unrest, coping with the aftermath of war, or the prospect significant likely challenges in adjusting with country reunification after a long period of separation.

All countries which were the subject of this study were market driven economies, or moving towards market economies, (in some instances from a centrally controlled model), and in the direction of economic systems more directed at manufacturing and the growth of a services sector.

Government employment or employment with state controlled bodies, is tending to become less significant, both in real terms and also as a likely destination for school leavers. Hand in hand with these changes, is the growth in trade between countries. Increasingly, countries in the region look outwards in their trading relationships, which is reflected internally by the need to improve both productivity and quality. In striving to create an efficient infrastructure, governments of the region seek to attract foreign investment and technological transfer from abroad. As the economic well being of a country improved this has acted as an impetus to improvements to the social welfare and the general standard of living of a society.

Human resource development.

Improvements to human resource development, both quantitatively and qualitatively, was seen as an essential percussor to continued economic growth and maintaining flexibility for future directions of a nation.

Most countries in the region were attempting to direct human resource development in a targeted way to enhance national economic welfare, often devoting additional resources towards sectors of particular interest to a country in the short and long term.

Generally, there is a trend towards more general education and avoidance of early educational specialization of career choice, where this is economically possible. Gradually countries in the region are attaining near universal attainment of primary education, and economic constraints, most countries are making significant provision for secondary and tertiary education, including the provision of TVE at secondary level or post-secondary level.

In spite of very strong demand for entry to tertiary institutions, there is a general inability and unwillingness of governments to supply sufficient funding for tertiary education to satisfy the demand for places. Graduate unemployment has emerged in a number of countries, which has led to the awareness that better provision of TVE programs directed at many of those who would otherwise wish to enter institutions of higher education is necessary for the national good, and to provide satisfying opportunities for those in this situation.

There are many instances in the region for targeted resources to be directed at groups perceived to be disadvantaged due to economic conditions, ethnic grouping, physical or mental disabilities, or gender to enhance the human resource development opportunities of those groups.

Another trend apparent, was the provision of programs constructed in such a way as to meet the needs of the individual. This was manifest in the provision of programs that were delivered in a mode that allowed for flexibility of course structure eg. modular courses, availability of courses in the open learning mode or external studies courses.

Although not universal, examples were given in a number of countries of good levels of cooperation between educational institutions, industry and commerce in enhancing the human resource development of individuals. This was particularly apparent in the form of industry placements of students undertaking related studies at an educational institution or joint conduct of programs.

International mobility of labour at all levels is significant in the region, with many countries reliant to some extent on remittances from their nationals working abroad. Those countries who have been able to train more highly educated and trained personnel gain more, by way of higher wage levels being remitted than is the case in the export of unskilled labour.

Although funding of TVE frequently represents a burden for individual countries, it is increasingly recognised more of an investment in future economic well being, rather than simply a cost.

The existing Technical and Vocational Education system.

There is considerable variation regarding the provision of TVE between countries in the region.

In the most countries formal provision of TVE is directed mainly at the secondary level, where it is commonplace for education ministries to conduct technical and vocational education programs of 3 years duration, and in cases some up to 6 years duration, as an alternative to more general secondary education which is directed at university or other forms of tertiary education.

However, there are a number of instances where TVE is undertaken subsequent to secondary or post-compulsory education, especially in polytechnics, and technical and further education colleges.

Increasingly, it is possible for young people who undertake TVE courses, to do so prior to entering full-time employment.

In a number of countries institutions outside the control of education ministries, offer training programs, especially at the skilled worker level. It is noted that in many countries institutions of this type are often the responsibility of a ministry of labour or similar ministry. Whilst institutions of this type may offer lengthy programs, that integrate industry placement of students, it is more likely that such programs are of a short term nature.

It is commonplace for government agencies other than education ministries to provide TVE programs. For example, armed forces training colleges, training institutions attached to state trading corporations, etc.

Industry based education and training tends to be provided on a limited basis in most countries in the region, directed at the acquisition of skills immediately useful to the enterprize and rarely integrated with mainstream TVE delivery in a country.

Issues addressed by Country Case Study researchers.

Most Country Case Study researchers addressed several issues outlined in the *Terms of Reference* for this project (refer to page 2 for details). This resulted in a reasonable coverage of issues cited for attention in the *Terms of Reference*, although a number of topics were not covered to any extent. In this case such issues have not been commented upon in the following text.

Although there is interest in long term issues, there is considerable interest in addressing very fundamental issues such as 'innovative strategies to cope with changing demands of the labour market', and 'policies to promote close linkages between TVE institutions and industries'.

This focus on basic structural issues associated with the provision and delivery of TVE, is very much a reflection of the fact that large scale availability of TVE is a relatively recent phenomenon in the region. In the main, TVE is only possible subsequent to the general provision of primary education, and widespread availability of the first few years of secondary education.

1. Strategies to innovate TVE systems to cope with the changing demands of the labour market caused by national economic development.

Many countries have demonstrated considerable innovation to cope with the changing demands of the labour market.

Australia has responded to significant economic, social and continuing technological change by developing and implementing a number of significant policy issues. This has included the development of National Competency Standards against an Australian (competency) Standards Framework. The development of a National Qualifications Framework to provide nationally consistent awards, not only for use by mainstream government funded TVE institutions (Technical and Further Education colleges) but also other government funded and private sector providers of TVE in Australia.

These initiatives have flowed through in a number of ways. For example, individuals undertaking TVE programs in the private sector are awarded nationally recognized qualifications. In recognition that many individuals attain vocational competencies through formal and informal means, considerable efforts have been made to methodically assess competencies, and recognise these on an individual basis, through a process described as Recognition of Prior Learning (RPL). Considerable efforts have also been made to address the need for broad-based training at all levels of the workforce, and the use of courses constructed on a modular basis has become commonplace, as has the widespread application of flexible learning program delivery. Traineeships have been developed to provide career entry training, that combines on the job training with formal studies in a number of fields where previously training was not available in a formal way.

The demands on TVE in Bangladesh greatly outstrip delivery capacity. In attempting to improve the standing and quality of TVE programs there has been significant efforts made to introduce a system of National Skill Standards (NSS) by the Bangladesh Technical Education Board.

TVE in China and Vietnam has been undergoing significant change as the country moves towards a market oriented economy. This has been manifest in a number of ways. For example, in China, to better address the need to reflect industrial requirements into TVE programs DACUM has been employed as a curriculum development tool. Competency-Based Education (CBE) has been introduced, and the dual-system has been delivered on a trial basis using the German model. Another initiative has been the operation of TVE school managed enteprises run in conjunction to educational programs, eg a factory run by the Second Dress Making School in Shenyang in which 40 per cent of profits were reinvested in improving school facilities.

In India, TVE is centrally directed but locally administered. A National Policy on Education was adopted in 1986. The Joint Council of Vocational Education is responsible for the overall co-ordination of all bodies in India concerned with TVE, and the All India Council of Technical Education regulates engineering, technology, management and technician education on a national basis. Efforts are being made to improve the quality, capacity and efficiency of technician level programs. Significant provision for vocational education is made within the framework of secondary education.

Indonesia, through a succession of five year development plans, has established a system of secondary TVE colleges linked to a network of polytechnics. Policies have been developed to improve the quality of TVE programs through improvement of curriculum, upgrading of teaching, administrative and support staff, facilities, and improved industry links. Implementation of a dual system of apprenticeship to better integrate tuition and structured on-the-job industry training are in progress.

To meet the needs of Iranian industry, there are policies in place to increase the availability of technician level personnel, by encouraging changes to the participation rate of secondary academic enrolments versus secondary technical the ratio is of which currently is around 90:10, towards a 50:50 participation ratio.

Japan is moving to increase the flexibility of upper secondary education. In 1991, the Central Council for Education issued a number of recommendations in respect of these changes. In addition to a general education stream, technical and vocational education concentrated on industry groupings such as business, fisheries, engineering and technology, nursing, etc. A so called 'Integrated Course' was also developed to permit students optimum freedom in the selection of subjects, to encourage them to cultivate the ability to learn independently, important attributes in a constantly changing society. The intent of these innovations, is that they will change the attitude of students towards career selection and also encourage a convergence between vocational and general education.

Due to structural changes in the Korean economy the demand for increasing numbers of multi-skilled personnel is growing. The need to improve the quality of the workforce is also an important matter. In this sense workforce quality is related to improving overall competency and ability to undertake a multiplicity of functions, in contrast to the previous demands of Korean industry which was able to advance on low paid unskilled labour. Various attempts have been made over the last couple of decades to increase the numbers of trained personnel in Korean industry including implementation of a Basic Law for Vocational Training in 1967 which required the private sector to spend a certain proportion of enterprise income on training. This requirement is now being partly discontinued in favour of a more deregulated approach as Korea moves from a 'production-cost oriented economic system' to a 'technology oriented economic system'.

Pakistan has been concentrating on improving the TVE infrastructure for several decades. These improvements are the result of a series of five year plans. The seventh five year plan (1988-1993) has included major proposals to increase TVE enrolments by over 33% . Future investment in the provision of TVE indicates a shift towards demand related training and away from supply based training, with a focus on the development of skilled personnel in emerging technologies and service industries.

With moves towards a more market oriented economy, Vietnam has been moving to reconstruct the TVE system to meet the needs of a changing society. A major policy thrust is the focus of targeting improvements in the quality of TVE provision, moving to improve the course curricula and training methods to make the system more flexible .

As the agricultural sector is declining in Thailand, education and training are major issues to effect change. The Seventh National Development Plan (1992-96) seeks to improve the numbers and quality of trained personnel, with a high priority on the expansion of secondary education, as well as expansion of the quality and throughput of technician and technologist level education. The private sector was also encouraged to undertake a role in providing education and training.

2. Policies to promote close linkages between TVE institutions and industries.

The thrust of the Australian approach to promote close linkages with the vocational education and training system and industry is to encourage a collaborative approach so that government funded, private and industry providers of technical and vocational education work together to satisfy the training needs of industry and commerce in Australia.

This has been reflected in the development and implementation of competency based training that has been developed in close consultation with industry. Programs have been developed that are broad-based, incorporating a modular approach directed at equipping students with generic competencies and industry specific skills. Courses are designed to integrate workplace training and formal aspects of education. The development of flexible delivery methods to extend the provision of institutional involvement in workplace training has been encouraged. Many industrial organizations have been accredited to deliver nationally recognised courses. Apprenticeship and traineeship arrangements have been encouraged particularly in areas where previous training has been of an in-house or in-formal nature. The Australian Vocational Certificate Training System has extended this notion, by integrating structured workplace training and formal education in a way that results in a nationally accredited series of Certificates aligned with industry endorsed competencies or brenchmarks. A further example of closer linkages between TVE institutions and industry in Australia, is the provision of training services to industry, by the government sector TVE institutions (TAFE Colleges) on a fee-for-service or basis.

The Bangladesh Technical Education Board has moved to encourage job market and training institutions to adopt a National Skill Standard (NSS) which provides training framework from basic trade training to masters level.

The State Education Commission which establishes policy in China encourages enterprises and educational bodies to jointly set up TVE schools.

The linkages between industry and TVE institutions are somewhat fragmented in Fiji although the Fiji National Training Council, which is a tripartite organization with representatives from Government, employers and unions, seeks to coordinate training requirements through a number of Industry Training Boards to improve course design and delivery.

India has a collaborative model of TVE institution and industry linkages which ideally operate at the planning, curricula development, and course delivery stages, and involve practical work and on-the-job training. For example, the Multipurpose Basic Health Worker course offered by the Municipal Junior Composite College of Gadag in Karnataka, which has been successfully delivered for the past decade, is a result of linkages and interaction between the College, collaborating agencies and the wider community. This has been achieved by establishing widespread rapport and good working arrangements with a number of hospitals and clinics, as well as the staff involved in those institutions, to enable students to undertake practical work.

Links between TVE institutions and industry are strongly encouraged in Indonesia. A 1992 Ministerial Decree required cooperation between TVE institutions and industry in a number of ways, including the need for communication on technological developments, intelligence on labour requirements, dual use of facilities, on-the-job training for students and work experience for teachers, job placement and interestingly a tracer system to assist in gaining feedback from graduates and industry. Most Indonesian TVE schools have established co-operative arrangements with industry to enable students to undertake work experience.

An example of institutional cooperation are links between the Aviation Senior Technical School in Bandung and the Nusantara Airplane Industry (IPTN) organization, where IPTN has donated equipment and material for student workshop practice and training for teachers.

The German dual system has aroused considerable interest in Indonesia, with implementation of this approach in 1989. In that year, the Surabaya Senior Technical School of Shipbuilding Trade and shipbuilder PT.PAL implemented a three year apprenticeship scheme where the School provided the theoretical tuition for the program and PT.PAL the work based training. In 1993, the Indonesian Ministry of Education launched a more widespread apprenticeship program with its 'Link and Match' policy.

The Technology Group of the Higher Council for Educational Planning in Iran, is responsible for curriculum development of TVE. Committees of the Technology Group have strong industry representation, which greatly contributes towards the quality of curriculum material produced. Use of facilities in industry, agriculture and commerce by TVE institutions has been facilitated through the Union of Universities of Technology.

Japanese students undertaking specialised courses are encouraged to undertake practical training related to their field of study, which involves significant periods in industry. For example, students undertaking fishery courses undertake training voyages lasting several months, those studying nursing undertake clinical practice in hospital, and sales trainees obtain work experience in department stores.

In 1991, the Malaysian Government established a Cabinet Committee to investigate the skills requirements of a number of industries that represented future areas of industrial development in Malaysia. The report of this Committee recommended significant improvements in the responsiveness of public training to market demands, an expansion of the role of the private sector in training, and strengthening of linkages between training and technological change. The Committee drew attention to the need for close linkages between technical and vocational education and industry, which has resulted in the Malaysian Ministry of Education initiating a number of programs in response to this policy thrust.

For example, the under utilised capacity of technical schools and polytechnics, during non-teaching periods was recognised, and a Time Sector Privatisation program which permitted industry to gain the use of training facilities of government TVE institutions was implemented as a 'symbiotic relationship' between industry and the institutions. Another Malaysian initiative has been the LINK program which involved vocational schools in Sarawak and Sabah, and the Shell Petroleum Company, in the training of welders to a high degree of proficiency. Initially, Shell put a number of welding teachers through a five month up-grading program at one of its plants, then with the assistance of Shell in the provision of equipment and materials, a number of trainees have passed through the welding course.

Subsequent to an International Labour Organisation study in 1978, the Pakistan Federal Government passed a National Training Ordinance in 1980, which created a National Training Board and four Provincial Training Boards. Policy formulation and approval of curricula is a Federal responsibility. Industry representatives are members of the Training Boards and Provincial Training Boards have established industry liaison and co-operation.

In the Seventh National Development Plan (1992-1996), Thailand has moved to increase the growth rate of student numbers undertaking technical and vocational education, and encourage the participation of industrial enterprises in the technical and vocational education process by:

- Facilitating private sector participation in planning and development of curriculum.
- Encouraging industry to provide details of market requirements.
- Improving industrial placement of technical and vocational education students.

Existing technical and vocational education/industry co-operation in Thailand consists of:

- At the National level (Determination of policy issues, guidelines, macro-solutions, core-curriculum development which will involve industry recommendations).
- At the institutional level (Industry training, job placement, in-service training of teaching staff, curriculum and teaching media development).

Thailand adopted the German dual system in 1988, on a pilot basis. This innovation was successful, and now involves more than 130 industries and 13 colleges.

Vietnam is planning to improve the linkages between training authorities and employers as it shifts towards a market economy. These initiatives are at any early stage, and will seek to improve the dialogue between training authorities and industry to reflect real industry needs.

3. Efforts to include entrepreneurial orientation and skills of TVE.

The Chinese Government encourages schools to set up and manage school-owned commercial enterprises, not only for the purpose of providing students with realistic skills practice, but also for the purpose of generating profits to be used by the school. School run commercial enterprises in China have been increasing rapidly, and in 1992 the total value of production and services provided by vocational schools came to 3 billion Yuan, of which 500 million Yuan was profit.

Considerable efforts have been directed at the development of an entrepreneurial orientation of TVE in India. Technician level education through the polytechnic network has had incorporated into the curriculum entrepreneurship development modules. Vocational education programs, which in the main is directed at students who would have an expectation of eventual self-employment, have entrepreneurship studies as an integral part of a course, with as much as 10 per cent of total course time is spent on this topic. The significant outcome of entrepreneurship studies is the enhanced chance of employment.

Indonesia has a significant history of promoting entrepreneurship through vocational education studies. In 1984, the senior technical and vocational education curriculum was framed with the aim of developing self-reliance and encouraging entrepreneurship. This was fostered through the establishment of production units at schools with the following objectives:

- The process of developing attitude values and entrepreneurship in a student.
- The matching of student competencies to the demands of the real world.
- Obtaining funds for the school.

In Indonesian agricultural schools, these concepts provided agricultural skills training for students and generated income to augment school finances. Students had an additional incentive as they were able to earn school fee credits as a result of their participation in such programs, as well as extra income for production unit work undertaken outside school hours. Most Indonesian technical and vocational schools have run production units, although this might be in a small way.

The production unit concept has had further refinement in Indonesia, with the establishment of a model unit for the building, electronics, electrical, mechanical and automotive industries at the Bandung Technical Teacher Upgrading Centre, in co-operation with a private enterprise entity. The objective of this initiative was to develop technical skills, create job opportunities in an encouraging environment, as well as producing additional income for the Centre.

4. Measures to improve the quality of teachers and instructors.

A commonplace concern in the region was both the availability and quality of TVE teaching. Almost every country in the region had some problems with the supply of TVE teachers. Clearly the availability of well trained and technically competent teachers is an essential precursor of effective development and delivery of TVE programs.

China has established 11 vocational teachers colleges with a total enrolment of 14,600. Generally TVE teachers in China come from general colleges and universities, and have limitations in terms of their vocational education knowledge and teaching methods.

In India, there is a target to train 1000 vocational teachers a year by the National Council of Educational Research and Training, by way of an in-service training program.

Indonesia has moved to improve the quality of teachers of technical and vocational education by taking action to redress the lack of practical and vocational skills relevant to industrial and business requirements. This is by way of providing qualified teachers with appropriate training programs through a number of Technical Teacher Upgrading Centres located throughout Indonesia.

Teachers of vocational subjects in upper secondary level Japanese schools are encouraged to keep up to date by means of in-service staff development. For example, data processing education in-service training of teachers has been delivered by means of a 40 day training program.

The Central Vocational Training Institute was established in Korea in 1968, to train vocational training instructors. Since then the Korean Government, with significant assistance from various international funding bodies has established further training centres.

5. Procedures to promote articulation between TVE and elements of the educational system, especially higher education.

Articulation between technical and vocational education programs and other elements of the education system is a vital factor in enhancing the status of TVE. Where educational offerings are of a terminal nature, then that option will be less attractive to most stakeholders and in particular to potential students and their parents. This case study topic drew the interest of a number of researchers.

Bangladesh has moved to integrate agricultural and basic trade training into general secondary education, commencing in 1994, in an attempt to articulate TVE with the general stream of education. This action was directed at providing employable skills for all secondary students in Bangladesh. To recognise this situation provision has been made for double certification by the Bangladesh Secondary Education Board and the Bangladesh Technical Education Board.

When junior high school students graduate in China, they can transfer to a senior high school or a secondary vocational school. Vocational school graduates can go on to a higher vocational school or enter a higher general school, but in practice few do.

Articulation arrangements in India, do provide some possibilities for articulation of vocational education graduates in the fields of art and commerce. Bridging courses to redress the academic deficiencies of secondary vocational education graduates have been looked at by Boards of Secondary Education and the universities, without resolution. On the other hand, another articulation pathway to higher education is through the polytechnic system.

Degree level vocational courses in India have been introduced to address the problem of many students undertaking general Degrees, and so graduating inadequately prepared for the world of work. About 100 Indian colleges/universities will be involved in the delivery of programs of this type in 1994-95.

The concept of open learning in India is of quite recent origin, and now provides an articulation pathway to many users for whom further education would not otherwise be an option. The National Open School in New Delhi co-ordinates programs delivered throughout India. Learning materials are organised in a modular form and in a style conducive to distance education.

Vietnam has been experimenting with articulation arragements between general education and vocational education. In the upper secondary school program, the curriculum provides for a two hour technical subject and a three hour technical practical application subject each week.

6. Policies to improve the participation of special social groups in TVE.

National strategies exist in Australia, which address the development needs of a wide range of disadvantaged people including, women, Aboriginals and Torres Strait Islanders, people with disabilities, unemployed people, and those from non-English speaking backgrounds.

As regards women, the Australian *Sex Discrimination Act 1984* banned discrimination against women seeking appointments in the workforce. The National Training Board has a policy that competency standards are not to limit access to employment of training on the basis of gender, and in 1991 issued a policy document *Eliminating Gender Bias in the Development of National Competency Standards*. Further, in 1991, the Australian Department of Employment, Education and Training formulated a national plan to increase the participation rate in TVE, entitled *Women and TAFE - A National Plan of Action*.. The recently introduced Australian Vocational Certificate Training System is expected to result in more equal training participation rates by men and women. Creative approaches to encourage the participation of women in non-traditional trades have been attempted with some success. For example, a scheme to train women for work in the building industry has been in existence since 1987. This scheme has concentrated on the importance of creating the right training conditions to encourage women to remain in what has traditional been a male dominated trade area. Similar initiatives have been applied to address the training needs of other special social groups in Australia, particularly over the last decade.

In Bangladesh, the Underprivileged Children Education Program, which is funded by a number of international agencies, attempts to assist illiterate working children from mainly slum areas, by means of a three year course of basic education, followed by a one year vocational training program, that is linked in to the Bangladesh Technical Education Board system of accreditation through the National Skills Standard scheme.

As a consequence of the 1991 National Economic Summit held in Fiji, the Fiji Government issued a policy statement which encouraged ethnic Fijians to play a greater role in the economy. Parallel to this the goals of the Fiji Institute of Technology we changed in 1993 to include an equity commitment to reduce the educational gap between indigenous Fijians and persons of other races.

In Korea, the various vocational training programs for a number of underprivileged groups were amalgamated into the Ministry of Labour's *Employment Promotion Training Program*, in 1993. The main focus of this scheme is the vocational training of farmers, the unemployed, married women, the elderly and a small number of handicapped persons.

Economic pressures have acted as a strong force increasing the participation rate of women in the Pakistan workforce. This situation is reflected in widespread provision for women in the Pakistan vocational training system, including introduction of non-traditional skill training in such areas as electronics, civil/architectural drafting and repair of domestic appliances. A recent Asian Development Bank study has highlighted the targeting of increased participation of women in a wide range of vocational training programs in Pakistan.

The Seventh Thai National Development Plan (1992-1996) has as an objective the solution of social problems brought about by economic change, with a focus on raising the capability of the underprivileged.

Vietnam has a large number of people who are unable to obtain employment due to a lack of training. Therefore considerable efforts have been made in the form of short term vocational training to address the immediate needs of those in need of training even down to vocational training centres at district level.

Factors which effect the status of technical and vocational education, and what strategies might be employed to facilitate improvements.

In producing the Country Case Studies, a number of researchers have commented on factors which impinge in the status of technical and further education, and in some cases offered solutions. Many researchers have noted the low status that is often attributed to TVE which is reflected in the attitude of students and potential students, their parents, employers, professional bodies, unions, teachers, government and educational administrators. The following then is a list of factors, which have an impact on the status of technical and vocational education, and some strategies for bringing about improvements to the situation.

- **Articulation** A very significant factor which affects the status of TVE is the question of articulation. Any program which does not have a mechanism to allow learners to transfer to a related course will be seen as 'dead end' activity, that will be viewed as a less attractive alternative when compared to another program which does facilitate the possibility of transfer. A lack of articulation arrangements will also have the effect of restraining the development of individuals in their working careers, which apart from any personal frustration will also restrict the human resource development of a nation.

  This situation is an important factor in the case of students who complete secondary school but are unable to gain entry to a university. Students in this situation will be more inclined to undertake post-secondary TVE programs if they know that further opportunities for study will exist if they do well in their TVE program.

  Therefore, well designed TVE courses will permit some form of articulation in both lateral and vertical directions, without compromising the vocational thrust of a TVE course. This situation requires considerable effort not only on the part of TVE authorities, but co-operation is also required from higher education institutions and other educational and training bodies in the government and non-government TVE sectors. If articulation arrangements are to be effective, it is essential that a national educational framework exists, which defines all levels of education and training, so as to avoid the problem of attempting to deal with a multiplicity of approaches to program classification.

- **Recognition of Learning** Intertwined with the question of articulation is the notion of 'recognition of prior learning'. 'Prior learning' can be of a formal or informal nature that results in the formation of competencies which could be related to an educational level.

  Prior learning could be obtained by an individual in a institutional setting, a course undertaken at a industry training centre, or in a informal way on-the-job.

  When prior learning attained by an individual is not recognised by an educational institution for the purposes of course entry or articulation with credit into a program, this situation disadvantages that individual, because that person might be unnecessarily required undertake a course of study that effectively repeats work previously learnt. This problem frequently applies at the TVE level, where the theoretical treatment of subject matter in a course may be treated in a concrete way, with less emphasis on analytical methods, with the result that the student undertaking a program at a TVE institution may well obtain little or no credit for studies undertaken when seeking to gain credit for TVE studies from a higher level institution. Resolution of this problem may require the intervention of government to encourage stakeholders to address this matter in a methodical way.

- **Broad based training** Many researchers have commented on the problem of developing a skilled work force which might be able to cope with increasingly more complex workplace demands. This problem is more acute when a country has witnessed extraordinary growth based on the availability of low-cost labour to undertake industrial tasks requiring low levels of skill, which could readily be gained on the job in an informal non-structured way.

  Mass production which is labour intensive has usually taken the Taylorist approach and segmented much work into specialised tasks. This approach was reflected in the skilled workforce which also tended to be quite specialized, and less flexible when confronted with significant change.

  Only professionals were expected to have breadth and depth of knowledge to take charge of complicated systems and processes. Inevitably, when a country begins to move towards the next cycle of economic growth which is more dependant on a workforce that has higher levels of skill and ability, to be competitive in a more technological demanding world, that can withstand the forces of international competition, it becomes apparent that what might have sufficed as regards education and training in an earlier period is no longer sufficient.

  As an economy develops, so the need to develop a workforce that is broadly trained, at all levels becomes more necessary. The desirability of having a broadly trained workforce that does not specialize too early in the initial training cycle is widely appreciated and understood. This aspect has an important effect on the status of TVE. Where the general approach to avoid undue emphasis on the development of basic skills, in favour of a broader curriculum, then TVE will be more desirable than is often the case at present.

- **Curriculum** The recognition of any educational activity is closely related to the quality and relevance of curriculum. In addition to ensuring that curriculum is broad based, unless a proposed training activity is simply directed at developing a particular skill, it is important that curriculum development is aligned with the needs of industry and business in a way that is harmonised with long term national objectives. It is important that curriculum development is directed in a way that results in the development of competencies required by industry and business.

- **Quality** The question of quality has a direct impact on the standing of any product or service, and the provision of technical and vocational education is no exception. The notion of quality is related to the excellence of a service and in the case of TVE relates to the relevancy of curriculum, the efficiency and effectiveness of course delivery and student management, the provision of required equipment and resources, the educative environment. The quality of a program is partly a function to the efficient use of resources applied to establish and deliver a program. Clearly if insufficient resources are available this will affect the quality of a program. In many countries the demands for expenditure on TVE outstrip available resources. Further, the trend towards funding for defined outcomes rather than the model which simply relies on financial inputs, puts pressure on educational administrators to efficiently manage available resources to bring about the best quality educational outcomes possible.

- **Teachers** Teachers are seen as being a key element in the provision of quality TVE programs. It is essential that TVE teachers are not only qualified in an academic sense, but have a good knowledge of real world systems and processes within their field of teaching. Ideally, this should be attained prior to entering TVE teaching duties, and kept up to date by regular contact with industry or commerce, or otherwise addressed through in-service programs. However, this is not always possible and in this case other arrangements need to be put in place to overcome such deficiencies. The Indonesian Technical Teacher Upgrading Centres which develop industrial competencies are a good example of a response to this problem. In addition, like all teachers regardless of the level of teaching duties, preparation in pedagogy, directed at TVE teaching is essential, before a teacher commences teaching duties or shortly thereafter. In many cases the funds available to pay TVE teachers, are significantly less than comparable employment in industry or commerce, which results in substantial leakage of TVE teachers from education to take up more lucrative duties in industry. All of the above matters impact on the standing and status of TVE teachers, and by default the status of TVE.

- **Industry Linkages** Linkages with industry are another key aspect that impinges on the status of TVE, and it is noteworthy that TVE systems and institutions in all countries of the region have either formed effective links with industry and commerce, or are moving in this direction. Nevertheless, it is obvious that in many countries there still exists significant gaps in good working relationships between TVE and industry. This is partly a function of the unsatisfactory image that TVE has and in some instances will require a significant change in relationships between TVE and industry. If government in a country recognises the importance of having a well trained workforce to enable industry to deliver economic growth, particularly when industry moves away from labour intensive manufacturing towards a more technologically advanced industry sector and further growth in the service sector, it may be necessary for national governments' to look into the whole question of linkages between TVE and industry, with a view to formalising linkages at the national level, while at the same time encouraging dialogue and cooperation between TVE institutions and industry at the local level.

- **Duplication** Duplication and of TVE provision not only occurs between government funded bodies that are involved in TVE delivery, but also TVE provision by non-government bodies of the private or charitable kind. This was often seen to contribute to community confusion of the value and standing of courses undertaken and qualifications awarded. A manifestation of these difficulties were problems with curriculum development, varying course standards, non-standard nomenclature of courses, and a lack of overall integration of effort which frequently disadvantaged a student either in employment, or when seeking to articulate to other programs due to a lack of recognition of studies undertaken.

  Given that many countries are moving towards various forms of partial privatisation of TVE delivery, it likely that these difficulties will become more severe unless addressed and solutions found to integrate TVE provision for the national good. This situation invites the involvement of government to facilitate the development of regulatory mechanisms which oversee matters such as nomenclature, generic course guidelines, articulation arrangements, and so forth, for all TVE providers, in both the government and private sectors.

If the above issues in a meaningful way it is inevitable that the overall status of TVE would be raised.

RECOMMENDATIONS REGARDING THE CONDUCT OF TECHNICAL AND VOCATIONAL EDUCATION MADE AT THE REGIONAL MEETING KUALA LUMPUR, MALAYSIA 12th - 15th September 1994 UNESCO UNEVOC CASE STUDIES PROJECT A REGIONAL FRAMEWORK

1. Strategies to innovate Technical and Vocational Education (TVE) systems to cope with the changing demands of the labour market caused by National Economic Development.

Countries in the Asia/Pacific Region, in common with most other countries, are experiencing the effects of technological change on their economic development. Although the rate of technological change is different for all countries in the Region, these changes impact heavily on business and industry which needs to have a skilled workforce to meet the demands of new industrial and business processes and changed work practices.

To meet the challenges imposed by technological change, and to fulfil short and long-term economic goals, countries in the Asia and Pacific Region will need to develop responsive TVE systems, that provide the workforce with the skills required to meet the demands of increasingly complex industrial processes and the continued sophistication of information technology systems within the business sector.

It is therefore appropriate that countries in the Asia and Pacific Region support and adopt the following actions:

National TVE Policy Development

1.1 National TVE policies developed by governments or national agencies should be designed to achieve both short and long-term goals related to the implementation and improvement of TVE.

1.2 Regional and/or state political, educational and labour market bodies and committees should actively participate in the development of national TVE policies.

1.3 TVE providers (institutes, colleges, schools) in each country should have an input into and influence the way TVE policies are developed, so that policies and/or guidelines meet country economic, education and training requirements. TVE providers should have a 'voice' in the debate on the future of TVE in their own country.

Labour Market Planning and TVE Research

1.4 National TVE policies must be based on accurate and quantifiable labour market planning data. To ensure this is achieved, countries must establish agencies and/or systems to collect, analyse and distribute labour market information on which national policies and TVE programs can be developed.

1.5 National and/or state agencies and organisations should be established to undertake research into TVE within the country and to critically evaluate international experiences in education and training with the purpose of providing government 'policy-makers' with independent advice and reports so that short and long-term TVE goals, both at the national and regional level are achieved.

1.6 Any country in the Region should have the right to access TVE research data and labour market information from other countries free from any restrictions or limitations.

Funding for TVE

1.7 Given the crucial role TVE has in contributing to the economic development of a country through the education and training of skilled workers and technicians, government funding models should be reassessed so that more funds are directed to TVE.

1.8 There should be consultative processes established between private and public sectors, to discuss and decide on the most appropriate funding arrangements that allow for additional spending on TVE, by strengthening relationships between education, business and industry. Examples of mechanisms that can increase the funding for TVE are 'training levies' on business and industry, the ability of TVE providers to levy fees on trainees and students, and the capacity of TVE providers to operate as 'commercial enterprises'.

1.9 Governments should encourage the private sector to invest in TVE and support private sector initiatives, where it is demonstrated that these will lead to increased availability of training places, structured education and training programs and a credential or award that is recognised by industry and business.

Curriculum/Training Program Development

1.10 Curriculum/training program development is one of the most important aspects of a TVE system. Given that TVE systems should ensure the curricula or training specifications are aligned with the needs of business and industry, countries in the Region are encouraged to adopt a competency based vocational education (CBVE) approach.

1.11 For CBVE to be successful, countries will need to ensure that they establish or strengthen their TVE systems to be able to accommodate the requirements of CBVE for extensive industry involvement, course/program design and delivery, competency-based assessment, certification and accreditation.

1.12 TVE systems must ensure that they have the policies and processes established to maintain standards and accredit programs.

1.13 In view of developments in information and instructional technology, formats should be developed for curriculum documents that allow for translation and adaptation from country to country in the Region.

1.14 UNESCO should undertake an evaluation project, in co-operation with the World Intellectual Property Organisation (WIPO), to address the complex question of copyright as it pertains to the development and use curriculum documentation within the Region.

1.15 UNEVOC should investigate the establishment of a Regional Clearinghouse for collecting and disseminating policy documentation, TVE research reports and monographs, curricula and instructional materials.

1.16 There currently exists examples of co-operative curriculum development between countries within the Region. These co-operative ventures in designing high-priority curricula should be evaluated, documented and the results disseminated to countries proposing similar co-operative ventures.

2. Policies to promote close linkages between TVE institutions and industry.

2.1 Industry should be involved from the conceptualization and planning stage to the implementation and assessment of TVE programs.

2.2 There should be a legal framework to encourage industry to make financial contributions towards the provision of TVE .

2.3 Mechanisms need to be put in place to permit industry linkages either on a staff release or exchange basis.

2.4 Use of industrial infrastructure and equipment for TVE purposes should be encouraged.

2.5 TVE courses should be structured so as to satisfy objectives of industrial need.

3. Allocation and Utilization of financial resources to support TVE.

Financial resources need to be efficiently allocated and utilized to support TVE.

3.1 Funding allocations should take into account national development priorities.

3.2 When allocating funds care should be taken to reward cost effective institutions.

3.3 The performance of institutions should be monitored to ensure that they meet defined objectives.

3.4 Funding should take into account equity and regional disparity considerations.

4. Measures to improve the quality of teachers and instructors.

As teachers are critical to any program of instruction, their enhancement is essential for TVE status. Resources necessary to enhance the development of TVE teachers should be directed at ensuring improvements to the quality of teaching.

4.1 TVE teachers should be appropriately qualified to teach a program.

4.2 It is desirable that TVE teachers have the necessary industrial experience.

4.3 Mechanisms must exist to enable teachers to keep up to date with relevant industrial knowledge.

4.4 TVE teachers must be trained in effective management of the educative process.

5. Efforts to include entrepreneurial orientation and skills in TVE.
Self-employment is an important goal for those pursuing TVE in many countries. This necessitates the inclusion of entrepreneurial skills for small business development in the TVE curriculum.

5.1 An appropriate entrepreneurial skills curriculum should be developed and adapted by countries in the region.

5.2 Trainers from different countries should be given a general orientation/induction to entrepreneurship on a regional basis before the curriculum is implemented.

5.3 Curriculum development should be undertaken through a regionally coordinated mechanism and sharing of instructional resources should be encouraged.

5.4 Each country should expand entrepreneurial development activities and ensure wider coverage for identified TVE client groups.

6. Procedures to promote articulation between TVE and elements of the educational system, especially Higher Education.
Many countries in the Region are addressing issues associated with the articulation of TVE into Higher Education. Examples are available to provide countries with the processes and procedures to achieve this.

6.1 Country policies and procedures should ensure that fair and equitable processes are available for TVE graduates to articulate into, or gain credit towards, further or Higher Education.

6.2 Countries should endeavour to develop articulation/credit transfer systems that not only recognise formal study and qualifications but also adopt the principle of 'Recognition of Prior Learning'(RPL). RPL should be investigated by countries currently not using this approach as a legitimate means for persons to gain access to TVE programs or to articulate into further or higher education courses.

6.3 For articulation and RPL processes to be successful, policies, guidelines and procedures will need to be developed by each country to cover the important aspects of assessment and certification.

6.4 Assessment and certification processes will need to be devised to allow the assessment of trainees/students by appropriately qualified persons within the TVE system against established state or national standards or benchmarks.

6.5 TVE credentials should only be awarded by institutes and organisations who meet all the legal requirements established by national TVE authorities with respect to assessment, certification and registration. It should be mandatory that credentials obtained by the trainee/student from any TVE system, institute, school or private organisation should be recognised and endorsed by industry and business.

6.6 Flexible delivery and open learning methods of TVE propagation may also assist in promoting articulation.

7. Ways to improve career guidance and counselling.

Career guidance and counselling should be improved as it would assist in course choice and industry placement..

8. Policies to improve the participation of special social groups in TVE.

8.1 Due to a number of socio-economic, geographical and political factors, certain groups within countries have not had access to TVE programs. Therefore, it is imperative that countries cater for the needs of special groups within society and promote the principle of access and equity.

8.2 Countries should develop national policies and special TVE programs to accommodate the training needs of women wanting to work in non-traditional occupations/jobs. Countries will also need to ensure that support mechanisms and appropriate facilities are made available for women undertaking TVE programs.

9. Development of TVE in the informal sector.

Training in the informal sector should be integrated into national systems of TVE through implementation of:

9.1 National systems of course accreditation and assessment which cover of all providers of TVE, including the informal sector.

9.2 Recognition by the formal TVE sector of relevant programs undertaken in the informal sector.

ABBREVIATIONS

CBE	Competency Based Education
CBVE	Competency Based Vocational Education
DACUM	Acronym for Developing a Curriculum (A group process for determining competencies in an occupation or job as the basis for curriculum development).
IPTN	Nusantara Airplane Industry
NSS	National Skill Standards
RPL	Recognition of Prior Learning
TAFE	Technical and Further Education
TVE	Technical and Vocational Education
UNESCO	United Nations Educational Scientific and Cultural Organization
WIPO	World Intellectual Property Organisation